

XXXI. *New species of Hawaiian Hymenoptera, with notes on some previously described.* By R. C. L. PERKINS, D.Sc., M.A., F.E.S.

[Read November 15th, 1911.]

SINCE the descriptions of the Aculeate Hymenoptera were completed in the "Fauna Hawaiiensis," I have obtained the old collection formed by the Rev. T. Blackburn, wherein are a number of types of species that he described himself, as well as examples of the species that he sent for description to F. Smith and Cameron. The examination of this collection has enabled me to settle a number of doubtful points, and I take the opportunity of describing some new species. The genus *Nesoprosopis*, to which the bees, here described, belong, is very interesting from its strange and excessive development in the Hawaiian group, more than fifty species having been described from this small area. Outside the islands I have, until recently, been acquainted with only one other species of the genus, the European *N. krieckbaumeri*, Först., which, by a rather curious coincidence, since the genus was made by myself for the reception of the Hawaiian species, I happened to be the first to meet with in England. Recently I have received another species of the genus from Mr. J. C. Kershaw, collected by him in China, so that it probably extends right across Europe and Asia, though I suspect the number of species may be limited. I have included a description of the Chinese species in this paper. Should the genus not be found in the New World, one would naturally conclude that the Hawaiian forms were descendants of an ancient Asiatic immigrant. I have found nothing allied to *Nesoprosopis* in the very numerous Australian *Prosopidae* that I have examined. It may also be noted here that I have received *Megachile schauinslandi*, which was introduced into the islands between twenty and thirty years ago, amongst some *Hymenoptera* collected by Mr. Kershaw. Though its appearance was Oriental, we had no previous knowledge that it was found in China.

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Odynerus charadrophilus, sp. nov.

Niger, fronte rufonotata, mesopleuris rufomaculatis, propodei lateribus rufis, scutello rufonotata. Abdominis segmentum primum utrinque macula rufa antice bilobata ornatum. Alae infuscatae, caeruleo-iridescentes. Clypeus subtilissime punctatus, apice extremo laevi, deplanato, haud emarginato. Frons dense, nec profunde, grosse punctata, subnitida. Mesonotum subnitidum, fortiter nec remote punctatum, interstitiis sparsissime et perinconspicue punctulatis. Scutellum distincte, sat aequaliter, mesonoto subtilius punctatum. Propodeum remote punctatum. Abdominis segmentum primum minus breve, parte basali, a latere visa, rotundata, haud fere recte verticali, distincte nec dense punctatum. Segmentum secundum dorsale a basi fortius elevatum, obsolete subtiliter punctatum; ventrale post costas (satis fortes) anguste depressum, depressione male definita. Abdomen supra nitidum.

♀. Long. ad apicem segmenti 2 abdominalis 8 mm.

Hab. Molokai, 3,000 ft.

Obs. Almost exactly resembles *O. petrobilus* superficially, and is found in company with that species and *O. microdemas*, but it is not closely allied to these and is a very distinct species.

Odynerus hylophilus, sp. nov.

Niger, opacus, fronte rufonotata, mandibulis et apice clypei rufis, abdominis segmento primo utrinque rufomaculato, secundi dorsalis lateribus rufis, ventralis basi utrinque rufomaculata. Clypeus subtiliter punctatus, apice leviter dentato-emarginato. Frons peropaca, grosse subobsolete. Mesonotum opacum, subgrossum, remote nec profunde punctatum, puncturatione interstitiali vix videnda. Propodeum, a fronte visum, conspicue emarginatum, peropacum, haud vel vix punctatum, lateribus marginatis. Abdominis segmentum primum, a latere visum, fortiter fere aequaliter curvatum, vix nitidum, remotius punctatum. Segmentum secundum dorsale fortiter tuberculatum-elevatum, ventrale post costas distincte sat fortiter impressum, depressione haud perlata. Alae fortiter infuscatae, caeruleo-iridescentes.

♂. Long. ad apicem segmenti 2 abdominalis 7 mm.

Hab. Hawaii, in company with *O. rubropustulatus*, *obscuripunctatus* and *crypterythrus*. Most like the latter, but the structural differences are so important that it is very distinct and the alliance doubtful.

Odynerus xerobius, sp. nov.

Niger, mandibulis rufis, alis infuscatis et in parte costali evidenter caeruleo-iridescentibus. Clypeus fortiter emarginatus. Frons capitis subnitida, grossius aequaliter punctata. Mesonotum opacum fere aequaliter punctatum, interstitiis minutissime satis copiose punctulatis, punctulis vix discernendis. Propodeum peropacum, antice obscure rugosum, sive rugosopunctatum, concavitate sat alta transversim subtiliter rugulosa, rugis curvatis. Abdominis segmentum primum grosse, nec profunde, subcrebre punctatum, antice, a latere visum, fere verticale. Segmentum secundum dorsale simpliciter convexum, ventrale post costas fere planum, depressione nulla definita.

♂. Long. ad apicem segmenti 2 abdominalis circiter 7 mm.

Hab. Lanai. I am not at all sure as to the affinities of this rather obscure but distinct species. It may be most closely allied to *O. thersites* of Hawaii, but it is very different.

Nesoprosopis hula, sp. nov.

Mas niger; clypeus macula magna, antice dilatata, flava ornatus, lateribus ad $\frac{2}{3}$ longitudinis basaliq[ue] margine extremo nigris, macula extra clypeum utrinque plus minus triangularia et ad basim clypei postice extensa, flava. Articulus primus antennarum antice flavo-marginatus, pronoti tuberculis etiam postice flavo-lineatis. Tarsi omnes, tibiae anteriores, macula postica excepta, tibiae intermediae ad basim apicemque, tibiae posteriores ad basim late et ad apicem anguste, flavi vel flavescentes. Alae hyalinae, venis cum stigmate nigrofuscis. Caput, a fronte visum, latum, oculis fortiter convergentibus, genis longitudine mediocribus, laminae supra clypearis margine antico margine laterali (usque ad forsan antennalem) haud longiore, fronte dense subtiliter punctata, plaga pernigra carente. Antennarum articulus primus subtriangularis fortiter dilatatus, evidenter tamen longior quam latior, margine postico fortiter rotundato, antico fere recto, subtus distincte concavus. Caput cum mesonoto pubescentia minus brevi et erecta vestitum. Mesonotum minutissime quasi granulat[um], subtilissime obsolete sparsim punctulatum, haud nitidum, propodeo ad marginem anteriorem brevissime longitudinaliter rugosum, caetera parte tantum microscopice sculpturata.

Long. 5 mm.

Femina nigra, pedibus nigris, capite linea tenui flava orbitali utrinque ornato, pronoti margine postico utrinque leviter flavonotato, tibiis anticis antice testaceo-maculatis. Caput latum, genis distinctis,

brevioribus, fronte densissime ruguloso-punctata. Mesonotum peropacum, quasi minutissime granulatum et subtilissime et obsolete punctatum, linea mediali laevi ad medium mesonotum extensa, propodeo rugulis perpaucis brevissimis ad marginem anteriorem, vix videndis, sculpturato, caetera parte tantum microscopice sculpturata, quam mesonotum multo minus opaco. Abdomen laeve, haud evidenter punctatum.

Long. 6 mm.

The male of this species in my tables (Fauna Haw. II, 601) would probably be run down to twenty-eight, *N. mawiensis*, which is quite different, having a black clypeus. If, as is quite likely, it sometimes has two small yellow spots on the pronotum, a specimen so marked would run down to *N. kona*, to which it really is allied.

Hab. HAWAII, Kilauea, on *Myoporum*.

Nesoprosopis flicum, sp. nov.

Mas niger, clypeo macula magna flava antice dilatata ornato, marginibus lateralibus et basi nigris, extra clypeum utrinque macula flava orbitali post antennis acute prolongata. Pedes nigricantes, tibiis anterioribus antice flavescentibus. Alae leviter infuscaetae, venis nigrofuscis. Angustus, genis brevibus, laminae supraclypeari brevi, sutura apicali quam sutura lateralis longiore. Antennarum articulus primus fortiter dilatatus, longior tamen quam latior, margine postico fortiter rotundato, margine antico fere recto, angulo apicali quasi producto, subtus fortiter arcuatus. Frons capituli densissime punctata, plaga parva mediali nigriore minus distincta. Caput cum mesonoto pubescentia tenui erecta fusca vestitum. Mesonotum peropacum, subtilissime obsolete punctatum, propodeo sat longo, ad marginem anticam brevissime, inconspicue rugoso, caetera parte densissime microscopice sculpturata, postice nitidula. Abdomen haud evidenter punctatum.

Long. 5 mm.

This species would run to the heading of *N. mawiensis* in my table, and is allied to that species.

Hab. HAWAII, Kilauea, flying round ferns.

Nesoprosopis homoeochroma, sp. nov.

Mas niger, clypeo more *N. hulae* flavonotato, juxta clypeum utrinque macula flava triangulari magna, haud post antennis producta, pronoto postice bilineato, tuberculis etiam flavonotatis. Tibiae anteriores antice cum articulo tarsorum basali flavescentes, caeteris articulis pallide brunneis. Tibiae intermediae et posticae

ad basim minus late flavae, tarsi, excepto basali articulo plus minus flavescenti, fusco-brunneis.

Caput a fronte visum sat breve, laminae supraclypearis sutura anteriore et laterali fere aequilongis, fronte densissime punctata, media parte plaga pernigra, densissime sculpturata, conspicue signata. Antennarum articulus primus fortiter dilatatus, subtriangularis, evidenter longior quam lator, margine posteriori rotundato, anteriori fere recto, supra punctatus, subtus arcuatus. Mesonotum opacum, densissime et minutissime quasi granulatum, subtilissime fere aequaliter nec dense punctatum, pubescentia fusca longiore erecta vestitum, scutello opaco et mesonoto evidenter fortius punctato. Propodeum vix subnitidum, ad marginem anteriorem brevissime longitudinaliter rugosum, caetera parte quasi granulata (sive microscopice reticulata). Abdomen subnitidum, haud aut vix punctatum. Alae hyalinae, venis nigrofuscis.

♂. Long. 4·5 mm.

In my table this species would be included with *N. kona*, *kauaiensis* and *unica*, but it is not allied to any of these, and would be distinguished at once from the former by the colour of the legs and many other characters, from the latter two by the much less wide supraclypeal plate, etc. It is nearest to *N. coniceps*, but apart from colour the process of the eighth ventral segment is less dilated before the apical bifurcation. It cannot be considered as the ♂ of *N. specularis* without good evidence to associate the two.

Hab. HAWAII, Kilauea, with *N. dumetorum*, and looking like a brightly marked example of that species.

Nesoprosopis pele, sp. nov.

Mas niger, colore fere *N. homoeochromi*, sed macula clypeari paullo brevior et minor, maculis lateralibus postice subtruncatis, pronoto tuberculisque haud flavonotatis, tarsi anterioribus parum pallidis, articulo basali ad basim paullo flavescente, alis distincte infuscatis.

Caput, a fronte visum, subrotundatum, lamina supraclari brevi, margine anteriore quam margo lateralis perspicue longiore. Antennae fere *N. homoeochromae* similes. Frontis plaga pernigra medialis multo minus distincta. Mesonotum opacum, sparsius et remotius obsoletim punctatum. Area propodei ad marginem anteriorem brevissime rugosa, post hunc peropaca et densissime sculpturata, ad declivitatum tantum subnitida. Abdomen subnitidum, vix punctatum.

♂. Long. 4·5 mm.

Would run to the heading of *N. mawiensis* in the table, except for the yellow-marked clypeus. Structurally it differs from that species in the structure of the scape of the antennae, etc. I cannot consider it to be the ♂ of *N. specularis*.

Hab. HAWAII: Kilauea.

Formerly I confused it (as well as *N. homochromus*) with *N. dumetorum*, but the essential structural characters of the latter as given in my original description are correct.

Nesoprosopis coniceps, Blackburn.

I now possess the types of this species, and the specimens, from which I redescribed it, were rightly identified. In rare varieties the lateral facial spots, adjoining the clypeus, are greatly reduced in size, but I have seen none in which they are altogether wanting.

Nesoprosopis psammobia, sp. nov.

Mas niger, clypeo duabusque maculis lateralibus, postice ad foras antennales extensis, flavis, clypei suturis lateralibus nigricantibus, tarsis omnibus atris, tibiis anterioribus antice flavomaculatis, lamina supraclypeari saepe flavopunctata.

Caput, a fronte visum, utrinque longitudinaliter impressum, lamina supraclypeari minus elongata, sutura apicali ac sutura lateralis fere aequae longa. Frons densissime punctata. Antennarum articulus primus fortiter dilatatus, sed longior quam latior, margine postico fortiter rotundato, margine anteriore fere recto, subtus distincte arcuatus. Mesonotum opacum, dense aequaliter, nec profunde, punctatum, scutello paullo fortius aequaliter punctato. Propodei area antica ubique rugosa et opaca. Abdomen subnitidum, vix punctatum, marginibus apicalibus segmentorum pallescentibus. Processus apicalis segmenti 8 ventralis fortiter curvatus, parum dilatatus, apice bifurcato.

Femina nigra, antennarum flagello subtus ferrugineo, clypei apice transversim flavonotato, duabus lineis orbitalibus, post antennas haud extensis, flavis, tibiis anterioribus antice ferrugineomaculatis. Nonnunquam caput totum nigrum, notis nullis flavis. Frons capituli distincte nitida, densissime punctata, evidenter pubescens. Mesonotum fere opacum, distincte aequaliter dense punctatum, propodeo longitudinaliter rugoso, a fronte viso, subnitido. Abdomen plus minusve nitidum, fere impunctatum, pilis apicalibus fusciscentibus.

♂ ♀. Long. circiter 6 mm.

This species is difficult to place. I think it belongs to the *blackburni* group, but it shows some affinities with the *facilis* group. In the table it would, if considered as having the process of the eighth ventral segment not dilated, be run down to *anthracina*, to which it is somewhat allied; if the process be considered dilated, of which there is slight indication, it would run to the heading of *N. assimulans*, to which it is still more closely allied. The variation in the colour of the face in the ♀ is very remarkable and unusual.

Hab. HAWAII; a littoral or sublittoral species.

Nesoprosopis chinensis, sp. nov.

Mas niger, capite prae antennis flavo, hoc colore paullo post antennis juxta oculus acute producto, antennarum articulo primo antice flavolineato, flagello, subtus ferrugineo. Pronotum utrinque cum tuberculis et tegulis flavonotatis. Tibiae anteriores supra tarsisque flavi; intermediae ad basim cum tarsis flavae, horum articulis apicalibus flavotestaceis; posteriores ad basim late flavae, tarsorum articulo basali flavo, sequentibus testaceis, apicali fusco.

Clypeus haud laevis, dense et parum profunde punctatus, lamina supraclypeari lata, sutura apicali, quam lateralis, permulto longiore. Antennarum articulus primus subdilatus, circiter bis longior quam lator, subtus distincte arcuatus. Frons capitis densissime punctata. Mesonotum distincte denseque aequaliter punctatum, scutello postscutelloque, quam mesonotum, rugosius punctatis. Propodei area anterior nitida, glabra, rugis transversis compluribus fortissimis ornata, caeteris partibus rugosis, et pubescentia pallida vestitis. Alae hyalinae, venis fuscis, vena subcostali cum stignate obscuriore. Abdominis segmentum primum pernitidum, remote et subtilissime punctatum, margine apicali latera versus densius pubescente, segmento secundo densius punctato.

Long. circiter 6-7 mm.

Abdominis armatura genitalis angusta, stipitibus angustis, subacutis, parce pilosis, post sagittas (in aspectu dorsali) extensis, segmento 8 ventrali (in aspectu ventrali) longe producto, processu ubique dilatato, suberecto, apice bifurcato et dilatato, et pilis longis vestito.

Hab. CHINA: Macao and West River as far as Kwei-yuen (Kershaw).

The Blackburnian collection of Aculeata, when received by me, was generally in good condition, excepting that the

specimens were in need of cleaning, and some specimens, not of much importance, were in process of destruction from the formation of verdigris.

Odynerus hawaiiensis, Bl. Under this name a number of species were confused. As mentioned in the "Fauna Hawaiiensis," a specimen sent to me by Mr. Blackburn, as representing this species, was a female of *Pseudopterocheilus pterocheiloides*, and I suggested that *O. hawaiiensis* might really be my *O. erythrognathus*. As a matter of fact, five of the twelve examples are *erythrognathus*. The individual, however, which bears the type label, is unfortunately the very distinct *O. venator*, and as this individual is specially referred to in the original description as being a *variety*, it seems doubtful whether it can be accepted as the type of the species. If the name "hawaiiensis" be accepted at all, it should, I think, sink my species *O. erythrognathus* rather than *O. venator*, in spite of the type label. On the other hand, the description of *O. hawaiiensis* was made from a series of such different species that one may well doubt whether it ought not to be disregarded. Thus five specimens, as above mentioned, are my *Odynerus erythrognathus*, one, the type, is *O. venator*, one is *O. thersites*, three are *Pseudopterocheilus pterocheiloides*, one is *Chelodynerus chelifer*, and one is *Nesodynerus egens*. The confusion of species is due to the fact that Mr. Blackburn followed Smith in his system of description of the Hawaiian Hymenoptera, and paid no attention to the mouth parts, mandibles, second abdominal ventral segment, and the tibial spurs.

Odynerus vulcanus, Bl. The examples referred to as varieties are *O. konanus*, P.

O. haleakalae, Bl. This, or rather the type, is, as I suggested, my *O. costatus*, but it also included one *O. lanaiensis*, P., and one *O. lacrisulcatus*, P.

O. agilis, Smith. Now known as *O. smithii*, D.T., the name *agilis* having previously been used by Smith in the genus. The Blackburnian series consists of *O. smithii* 4, *O. socialibus* many, *O. scoriaccus* 2, *O. peles* 1.

O. dubiosus, Sm. The types are as identified by me, but Blackburn's specimens included *O. pterophacunes*, P.

O. insulicola, Bl. The series contained one *Nesodynerus cooki*, P., or a form representing that species on Maui.

O. kirbyi, D.T. (= *O. extraneus*, Kirby) is represented by one *O. kauaiensis*, P., only.

O. localis, Sm., is represented by one *O. radula*, Fab., only.

Crabro adspectans, Bl., is my *Nesocrabro daemonius*, which becomes a synonym.

Crabro mawiensis, Bl., is a yellow-spotted ♀ of *Crabro mandibularis*, Sm.

The female *Crabro* suggested as belonging to the ♂ of *C. abnormis*, Bl., is the ♀ of my *Hylocrabro tumidoventris*, the ♂ of which occurred in the series of *Xenocrabro unicolor*, Sm.

The Blackburnian specimens of *Mimesa antennata*, as named by Smith, were a closely allied species, my *Nesomimesa nitida*.

Nesoprosopis facilis, Sm., on which Blackburn published some remarks, included also *N. koae*, P., from Oahu, and *N. difficilis* from Hawaii.

A long series of *N. blackburni*, Sm., of which I have seen the types, contained only one true *blackburni*, most of the specimens being *N. longiceps*, P., with *N. obscurata*, P., from Hawaii.

It is proper to remark that in *Odynerus* the characters of the second ventral segment being at the time the Hawaiian insects were described hardly ever utilised by hymenopterists, and the concealed male terminal segments of *Prosopis* not at all, the confusion of species is not at all to be wondered at.

O. conifer, P., subsequently referred by me to the genus *Nesodynerus*, was wrongly so referred. The specimen that I examined was an old one, and no doubt had the calcaria broken. They are present in the type.

Pison argentatum, Sh. This is a recent introduction into the Hawaiian islands, and the species was kindly determined for me by Mr. R. E. Turner. It was described from Mauritius, and is also recorded from Singapore and Borneo. I have no doubt it will be found to occur in China or Japan, and was thence introduced into Honolulu.